

HP NetMetrix:

Remote Monitoring Agent (VERSION: 4.5.06)

Prepared for: **DISA**

By: **J.G. Van Dyke & Associates**

TYPE: **UPDATE**

Submitted: **12/20/96**

Table of Contents

Version Description Document (VDD) Revision 4.5.06.....	3
Software Requirements Specification (SRS)	6
Operators Manual (OM)	6
Software Test Plan (STP).....	7
Software Test Description (STD)	7
Known Problem Lists (KPL)	7
Installation Instruction Procedures (IP).....	8

Version Description Document(VDD) Revision 4.5.06

Hewlett Packard, Inc., NetMetrix Remote Monitoring Agent, Version 4.5.0

The HP NetMetrix product consists of two parts. The first is the remote monitoring Power Agent which implements all nine groups of the RMON MIB (RFC 1271) plus extensions. The second is the application toolbox which implements the graphical toolset consisting of the network load monitor, the network file system (NFS) monitor, the protocol analyzer, the traffic generator, and the internetwork monitor. Together, this package assists in monitoring the performance of your network segments (ethernet, FDDI, tokenring), and troubleshooting network problems.

The application toolbox will only be installed on the network management platform(s), while the the Power Agent will be installed on one application server per network segment excluding the EMSSERVER and Oracle Database server.

This revision supersedes all previous revisions of the NETM Memory Config and Network Monitoring Agent segments. Deinstall all previous revisions of these segments before installing this revision (version 1.0.06 and 4.5.06).

System Requirements

HP 9000/7xx, HP 9000/8xx with HP-UX v.9.x or
Sun SPARC with Solaris 2.3 or 2.4 or SUNOS v. 4.1.3

- 48MB of RAM when running the applications, and 32MB of RAM when running the Power Agent.
- 150MB of disk space is required for the entire package, or
- 13MB when running the power agent only.
- Swap Space: 64MB.

RMON MIB

The Remote Monitoring MIB defines a set of objects useful for the management of network segments. The RMON MIB is broken down into nine groups:

- Statistics - low level utilization and error statistics for the subnetwork.
- History - periodic sampling of the statistics data.
- Alarm - allows thresholds for integer and counter data to be set.
- Host - contains counters for traffic to and from hosts attached to the subnetwork.
- HostTopN - contains sorted host statistics for hosts that top a list based on some parameter in the host table.
- Matrix - shows utilization and error information about network address pairs.
- Filter - allows the monitor to observe packets that match a filter.
- Packet capture - allows the monitor to capture and store data matching a filter.
- Event - a table of trap events generated by the RMON agent.

Power Agent Extensions

In addition to the standard RMON MIB services, the HP NetMetrix agent permits monitoring of protocols above the transport layer of the Open Systems Interconnect (OSI) communications model. This includes monitoring of NFS sessions between an NFS server and its NFS clients, as well as a breakdown of bandwidth utilization by protocol type.

The protocol analyzer lets you capture and decode packets on the network. Specifically, you can:

- Capture packets and analyze their contents.
- Decode packets automatically.
- Build filters and triggers to capture packets of interest.
- Detect nodes generating excessive packets.
- Retrieve and display captured packets from a standard RMON agent.
- Arm a packet capture and associate it with an alarm.

Trend analysis tools let you analyze the long-term load variation on the network. It consists of three parts:

- A script called trend.sh which schedules the load monitor or NFS monitor data collection and stores it in an archive file.
- A script called report.sh which generates a report based on the archived data and sends it via e-mail to a designated user.
- The loadmerge and nfsmerge utilities which combine multiple archives into one allowing a long-range view of network usage.

The internetwork monitor consolidates the view of traffic patterns across the subnetworks making up the larger internetwork. The internetwork view provides a comprehensive view of network activity, both with live data and historic data. This is useful in fine tuning the configuration of the network.

Traffic generator lets the manager transmit packets and put a load on a segment. With the traffic generator you can:

- Generate packets at a specified rate or at random rates.
- Construct packets for transmission using a packet editor.
- Retransmit packet traces from the Protocol Analyzer tool.
- Send and receive packets and generate conditional responses to help in debugging protocols and applications.

Traps

The NetMetrix Power Agent can be configured to notify the management platform of the occurrence of predefined events. This management by exception is the least intrusive method for management of the network. Instead of actively polling the network elements on a regular basis for their status, and thus consuming network bandwidth, management by exception alerts the network manager to a problem, and at that point the manager will actively poll certain network elements in an effort to isolate the fault.

Plots

The various views presented by the HP NetMetrix applications can be converted into bitmaps and plotted, with the Sun GrapherTool.

Software Requirements Specification (SRS)

Since this is a COTS product this section is not applicable.

Operators Manual (OM)

The NetMetrix Power Agent is a system daemon that runs on a UNIX host. Operation of the Power Agent consists of starting the daemon on the host system. This is accomplished on system boot-up by the `/etc/rc2.d/S98netm` script or from the command line by the `/usr/netm/config/S98netm start` command.

To check for successful agent start `% ps -aef | grep netm` and check that both the `rmond` and `netmd` processes are running. In addition, verify that the crontab script is running with the command `crontab -l netadmin`. There should be two entries listed by this command, one is a **trend.sh** shell script command, and the other is a **purge_archive.sh** script command. The **trend.sh** script collects traffic statistics for the network segment attached to the host interface, and archives this information for later e-mail to the central management platform. The **purge_archive.sh** script ensures that the file system retains only five days worth of archive information. These archives can be used later for historical analysis.

Software Test Plan (STP)

Test and acceptance of the Agent consists of the following steps.

- ⇒ Successful installation of the NetMetrix Power Agent segment.
- ⇒ Successful starting of the Power Agent.
- ⇒ Configuration of the host system into the Agent Toolbox Window. To do this launch the Agent Toolbox with the netm& command, then select Edit from the menu bar. Select Agents and fill in the pertinent information and save with the Apply button. A Power Agent Icon then appears in the window.
- ⇒ Successful connection to the Power Agent installed on the host system, and display of data with the HP NetMetrix Load Monitor tool on the network management platform. Highlight the Power Agent Icon, and then with the right mouse button select Load Monitor, and pull right to select RMON. The Load Monitor Window will appear. Press Start and then Zoom in the menu bar. A set of live statistics will be displayed in the window.
- ⇒ Successful receipt of trend reports via e-mail at the netadmin user account on the central management platform. The network management personnel can confirm this is working.

Software Test Description (STD)

Not applicable.

Known Problem Lists (KPL)

This version of the HP NetMetrix software it is suspected of having performance problems when monitoring FDDI interfaces on lower performance machines. These problems occur only on Solaris 2.x systems in combination with certain patch subsets. Which patch subsets cause problems is as of yet unresolved.

Installation Instruction Procedures (IP)

HP NetMetrix Remote Monitoring Agent

The following script is an example of the installation process for the HP Netmetrix Power Agent segments. This will include the NETM and NETSYS segments which are required for complete installation. Suggested responses are enclosed in braces "{}":

1. Ensure that you are logged on to the network as user **'sysadmin'** {%su - sysadmin}
2. Run Segment Installer Program {%SAInstaller -debug}
3. Load the segment tape into your tape drive and select Install.
4. Click on ⓈSELECT MEDIA' from the SA Installer screen.
5. Select the appropriate host and device information then click on "OK" when done:

{REMOTE HOST NAME: zorro}

TAB over and select OTHER for the device

{DEVICE OTHER: /dev/rmt/0mbn}

6. Select 'READ TOC (Table of Contents) from the SA Installer screen.

NOTE: (Please ensure that you have both segment modules listed in the file display window; this is a verification check to make sure the tape contains what it needs prior to you DEINSTALLING anything.)
--

There should be 2 segment modules on the tape, Network Monitoring Agent version 4.5.06 and NETM Memory Configuration version 1.0.06. Once you have verified that these RMON segments are on the tape you can continue with step 7.

7. From the Table of Contents list select and highlight the ⓈNETM Memory Config' and the 'Network Monitoring Agent' segments.
8. Go to the bottom portion of the Installer Screen, under the SEGMENTS CURRENTLY INSTALLED list and select the previous versions of the ⓈNETM Memory Config and Network Monitoring Agent segments.

9. Click on **DE-INSTALL**. The segments you have selected will be DEINSTALLED and a message screen displaying a successful or unsuccessful procedure will be displayed. If successful, please continue with the following steps. If unsuccessful, please contact the GMC Help Desk (DSN 225-0671) immediately. Make a note of any and all error messages or codes the system is displaying for you.
 10. Once the DEINSTALL has completed successfully, you may continue with the following steps.
 11. When the Segment Installer Screen reappears, select (highlight) from the Table of Contents list those segments you want to install. Then select 'INSTALL' in the source area of the Segment Installer Screen.
 12. When the **PostInstall.NETM** XTERM window pops up, you will see several informational messages as the install proceeds, then the agent will be started. you may be prompted to create a netadmin account. This account is used for remote access to fine tune and optimize the agent. The password **netadmin1** is suggested but not mandatory.

If you **do not** use the suggested password, notify the GCCS Help Desk of the new password by sending an email to **netadmin@GMCNet1.GMC.NMCC.smil.mil**.
- If the system parameters were changed a message will appear telling you to reboot before installing the Network Monitoring Agent segment. Please reboot the machine and continue with step 1.**
13. When the **PostInstall.NETM** XTERM window will again pop up, be aware of any error message and report them to the GMC Help Desk.
 14. A message box will be displayed saying the segments were installed either successfully or unsuccessfully; if successful, verify on the Segment Installer Screen that the segments have been installed. If they are there continue with step 15.
 15. Bring up an XTERM window to further verify that the agents are indeed running on the UNIX system by using the command **ps -ef | grep netm** and look for the **netmd** and **rmond** processes.
 16. If no errors were encountered, exit the SAInstaller; otherwise, contact the GMC Help Desk (Commercial 703-695-0671 and DSN 225-0671) to report any problems.